

True On Line Double Conversion UPS

User's Manual

1Kva/2Kva/3Kva

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Chapter 1. IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual contains important instructions that should be followed during installation and maintenance of the UPS and batteries.

An Important Notice

- To ensure safety in all applications where a UPS is hard wired to the Electrical Supply, ensure that the system is installed by a Qualified Electrical Contractor.
- The UPS systems which are supplied with a factory input plug can be safely connected to the wall receptacle by the user.
- This UPS is connected to an internal/external battery bank. There will be voltage at the output terminals if the UPS is turned on even if the input AC Mains is not available.
- Make sure that the AC Utility outlet is correctly grounded.
- Do not try to repair the unit yourself, contact your local supplier or your warranty will be void.
- Please make sure that the input voltage of the UPS matches the supply voltage.
- Use a certified input power cable with the correct plugs and sockets for the appropriate voltage system.
- To eliminate any overheating of the UPS, keep all ventilation openings free from obstruction and do not place any foreign objects on top of the UPS. Keep the UPS 20 cm away from the wall.
- Make sure the UPS is installed within the proper environment as specified. (0-45 °C and 30-90% non-condensing humidity)
- Do not install the UPS under direct sunlight. Your warranty will be void if the batteries fail due to overheating.
- This UPS system is designed for indoor use only.
- This UPS system is not design for use in dusty, corrosive and salty environments .
- The warranty for this UPS will be void if water or other liquid is spilt or poured directly onto the UPS. Similarly we do not warrant any damage to the UPS if foreign objects are deliberately or accidentally inserted into the UPS enclosure.
- The battery will discharge naturally if the system is unused for a period of time.
- It should be recharged every 2-3 months if unused. If this is not done, then the warranty will be null and void. During normal operation, the batteries will be automatically remained in charged condition.
- This UPS supports electronic equipment in offices, telecommunication, process control, medical and security applications.
- The UPS is not suitable for the application in inductive loads, such as emergency light. Please do not connect the UPS to any inductive load.

- This UPS has been designed and constructed to protect your assets from the wide range of power aberrations experienced on Utility power lines today. It is your insurance for reliable, clean and stable voltage supply. It is important to install the system correctly and to have it maintained correctly by your local distributor.
- **WARNING:**
This is a Class A-UPS Product and may cause radio interference to other home appliances. User are advised to take additional measures and check with their local distributor if in doubt.
- Intended for Installation in a Controlled Environment.
- Servicing of Batteries Should be performed or Supervised by Personnel Knowledgeable of Batteries and the Required Precautions. Keep Unauthorized Personnel Away from Batteries
- When Replacing Batteries, Replace With the Same Quantity, Type & Capacity.
- **CAUTION –** Do Not Dispose of Battery or Batteries in an open fire. The Battery May Explode.
- **CAUTION –** Do Not Open or Mutilate the Battery or Batteries. Released Electrolyte is Harmful to the Skin and Eyes
- **CAUTION –** Risk of Electric Shock – Battery Circuit is not isolated from AC, hazardous Voltage may exist between battery terminals and ground. Test before touching with bare hands.
- **CAUTION –** A Battery can present a Risk of Electrical Shock and High Short Circuit Current. The Following Precaution Should be Observed When Working on Batteries:
 - A. Remove watches, rings, or other metal objects.
 - B. Use tools with insulated handles.
 - C. Wear rubber gloves and boots.
 - D. Do not lay tools or metal parts on top of batteries.
 - E. Disconnect charging source prior to connecting or disconnecting battery terminals.
- **CAUTION –** To reduce the risk of fire, connect only to a circuit provided with 20 amperes maximum branch circuit over-current protection in accordance with the National Electric Code, ANSI/NFPA 70.(1KRT and 2KRT)
- **CAUTION –** To reduce the risk of fire, connect only to a circuit provided with 30 amperes maximum branch circuit over-current protection in accordance with the National Electric Code, ANSI/NFPA 70.(3KRT)
- **CAUTION -** In order to disconnect loads from UPS output in any mode operation for preventing further supply, please install a suitable external power switch or breaker between UPS output and loads.

Chapter 2. Product Introduction

2.1. General Characteristics

- True online, Double Conversion architecture continuously supplies to your critical device with a stable, regulated, transient-free pure sine-wave AC Power.
- 50KHz PWM sine-wave topology yields an excellent overall performance.
- The high crest factor of the inverter handles all high-inrush current loads without a need to upgrade the power rating.
- To protect the unit from overloading, the UPS will automatically switch to bypass mode when the connected loads exceeds 120% of rating. It will automatically switch back to inverter mode once overload condition ceases.
- Should the output becomes short-circuited, the UPS holds the system with current limits and supplies to the output automatically till the short circuit situation is cleared.
- Should the unit become overheated, the internal thermistor will detect the over temperature and switches to bypass mode and returns to Inverter mode when the temperature returns to normal .
- Maintenance-free sealed-type battery minimizes after-sales service.

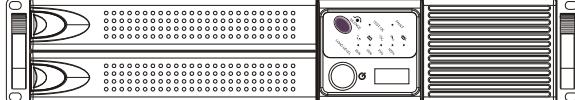
2.2. Advanced Technical Characteristics

- Innovative light weight and compact design for modern OA environment and OEM flexibility.
- Powerful CPU integrates all power stages, control and communication functions for maximum UPS performance; Including Power management status monitoring, configuration setting, operation Scheduling, remote control and self-diagnostic capability.
- Advanced digital communication capability allows full function remote control from any computer environment via standard RS-232 interface using Megatec's RUPSII protocol.
- State-of-the-Art IGBT Technology ensures highest efficiency and reliability under worst operating condition.
- Industry leading Inverter protection technology incorporates 2-stage output Current sensor, smart overload output current control, improved crest factor, and feedback failure proof circuit, elevating the availability of power service.
- Guarantees an exclusive protection against DC damage for inductive load, Such as motor based devices, allowing wide range of different applications.
- Advanced Input Power Factor Correction (PFC) capability guarantees near unity PF for maximum energy efficiency
- Unique electronic over-current protection detects output short-circuit and faults, and halts output before damaging to output fuse or equipment, minimizing the need for service.
- Wide input voltage working range minimizes battery usage and enhances battery life.
- Automatic Frequency Sensor enables automatic synchronization during frequency shift.
- DC-start function ensures possible start-up of UPS during power outages.
- Self-diagnostics function ensures UPS reliability and availability.
- Built-in supplementary charger enables speediest charging of external battery Bank.
- Optional SNMP adapter provides possible solution to achieve direct power management via internet protocol.

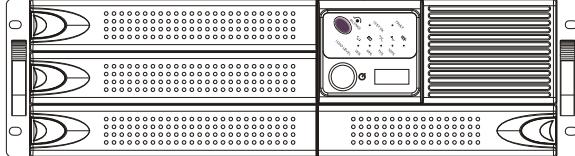
Chapter 3. Introduction to the Front and Rear Panel

3.1. Front Display Panel Descriptions

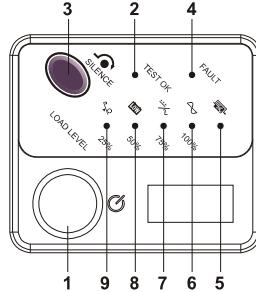
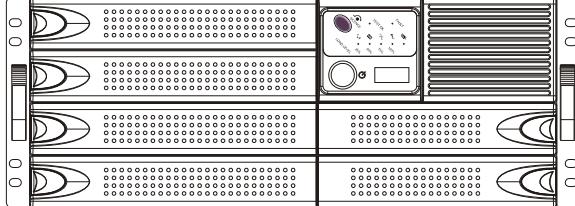
1Kva



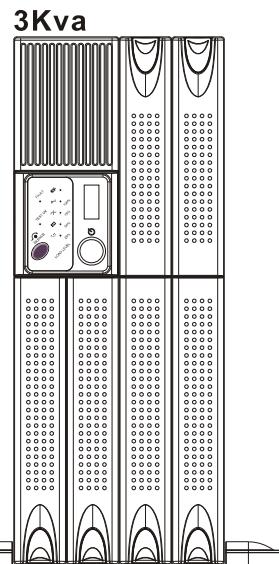
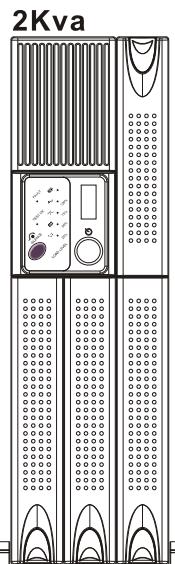
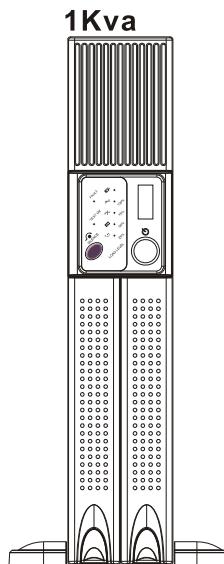
2Kva



3Kva

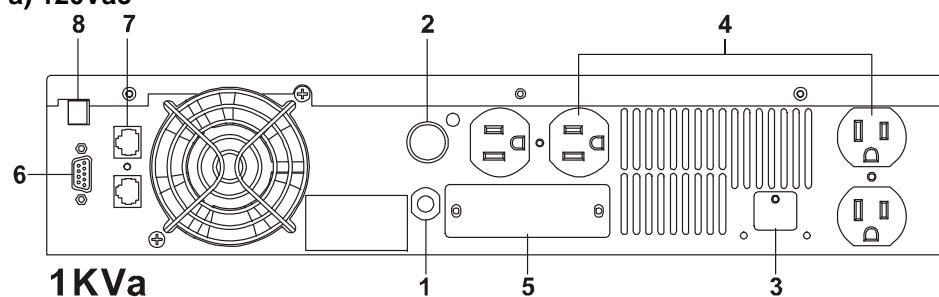


1. Main Switch Button	To Switch on/off the UPS
2. Self Test OK LED	Green LED lights up if self test is satisfactory.
3. Test/Silence Button	<p>a. To silence the alarm buzzer.</p> <p>b.1.Applicable for Standard Unit</p> <p>To execute the self test of the UPS by pressing the button over 10 sec.</p> <p>b.2.Applicable for Unit with Manual Bypass function (Special order required)</p> <p>To press the button over 5 seconds, the UPS will be switched to Bypass mode and vice versa.</p> <p>c. To illustrate the percentage of output load level at AC Mode, and the battery energy level at Backup Mode.</p>
4. Fault LED	Red LED lights up if UPS is faulty.
5. Bypass LED	Amber LED lights up when UPS is in Bypass mode.
6. Utility LED	<p>a. AC normal: Green LED lights up.</p> <p>b. 100% for load & battery level</p>
7. Inverter LED	<p>a. Inverter On: Green LED lights up</p> <p>b. 75% for load & battery level.</p>
8. Battery low LED	<p>a. Battery low : Red LED lights up</p> <p>b. 50% for load & battery level</p>
9. Over load LED	<p>a. Over load condition: Red LED lights up</p> <p>b. 25% for load & battery level.</p>

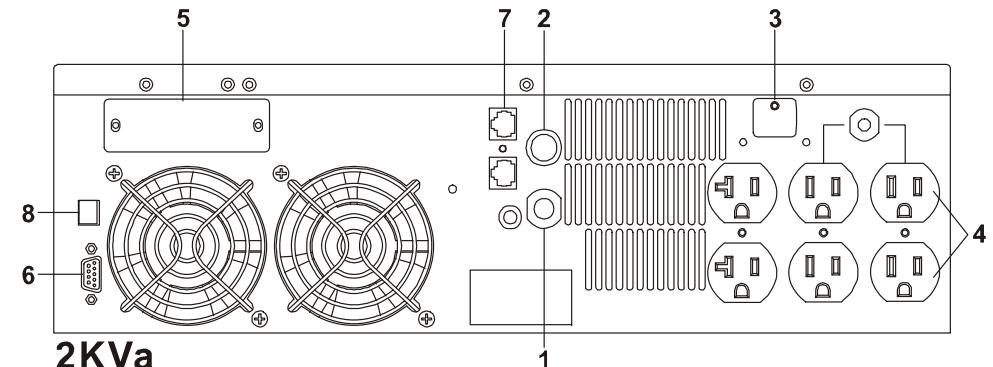


3.2. Rear Panel Descriptions

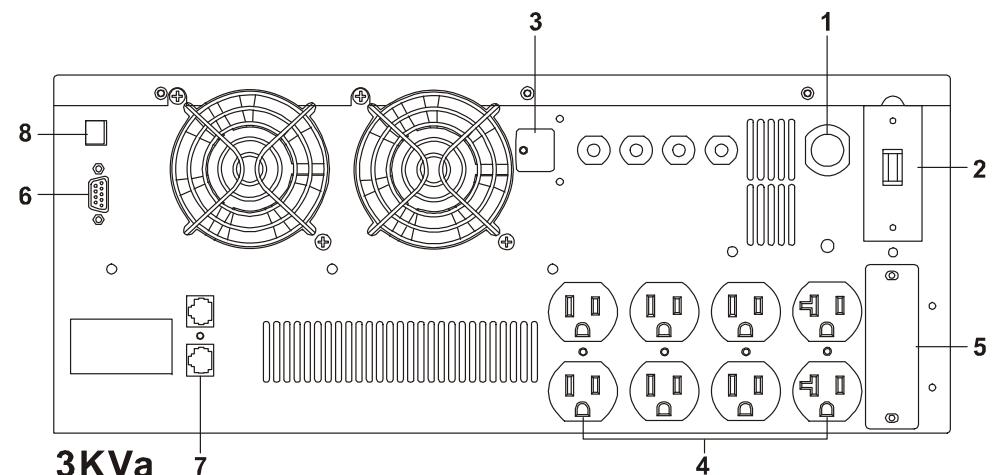
a) 120Vac



1KVa

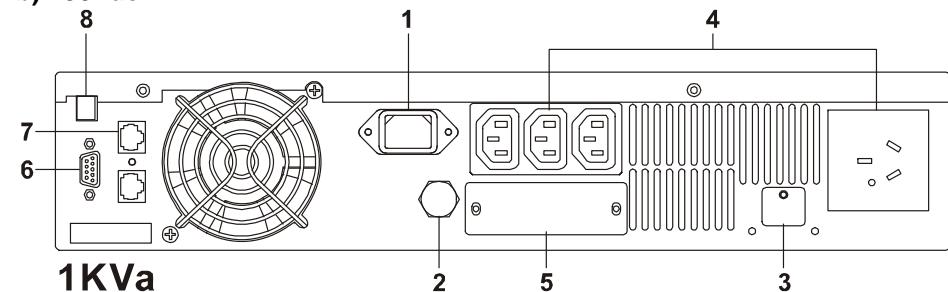


2KVa

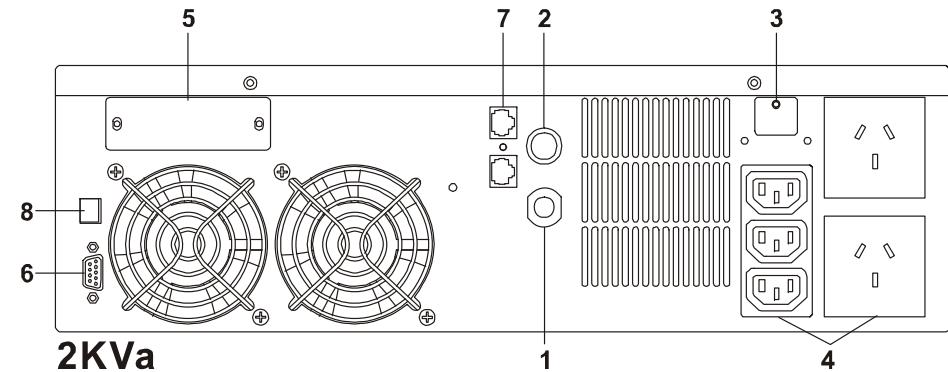


3KVa

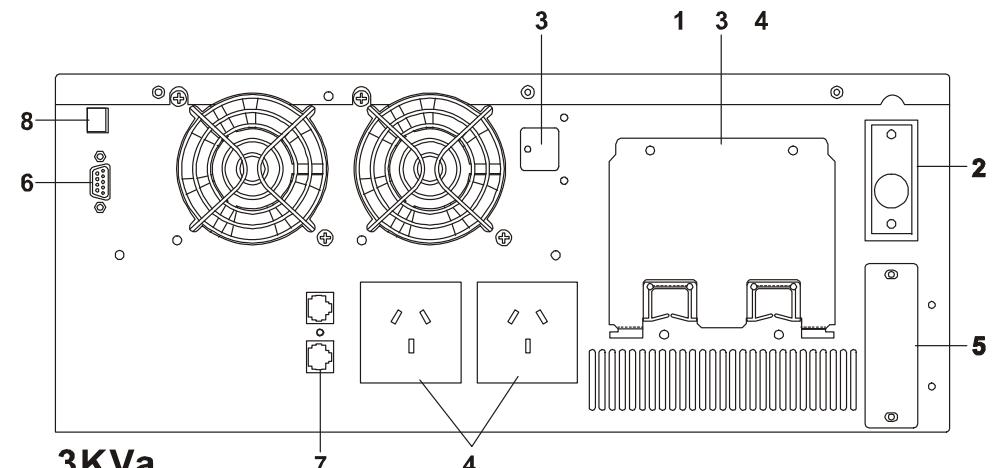
b) 230Vac



1KVa



2KVa

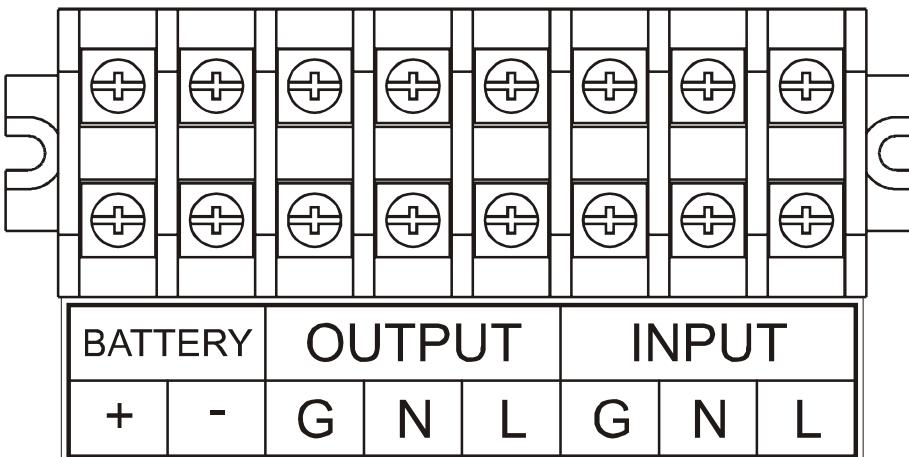


3KVa

1)	AC Inlet	This is to be connected with an AC power cord for plugging into the wall receptacle.		
2)	AC Input Fuse/ Breaker	This is to disconnect line input to protect application from Output overload or short circuit.		
		Fuse/Breaker Rating for 120Vac/230Vac systems		
		1Kva	2Kva	3Kva
		120Vac: 20A/250V 230Vac: 12A/250V	120Vac: 25A/250V 230Vac: 25A/250V	120Vac: 50A/250V 230Vac: 25A/250V
3)	External Battery Terminal	This is a battery terminal to be connected with additional battery banks for longer backup time applications. Only a Qualified technician is permitted to proceed the installation.		
4)	AC Outlet For 120Vac System	This is to be plugged by the devices to be protected by the UPS.		
		Socket type	1Kva	2Kva
		NEMA 5-15R	4pcs	4pcs
		NEMA 5-20R	N/A	2pcs
		For 230Vac System	1Kva	2Kva
		Socket Type	1Kva	2Kva
		IEC	3pcs	3pcs
		Local Sockets	1pce	2pcs
		Terminal Block	N/A	N/A
				Yes
5)	SNMP Slot	It is an optional feature used for SNMP card. Please Refer to Chapter 3.5 for hardware installation.		
6)	Comm Port	This is an interface to send and receive signals from the computer. Optional computer software may be required. Please refer to Chapter 3.3 for its pin assignments.		
7)	RJ11/RJ45 Jack	This is to allow a modem/internet(RJ11) and 10-Base T Network(RJ45) protection against line interference.		
8)	DIP Switches	For Calibrations.		

3.2.1. Terminal Layouts and Descriptions

For 3Kva 230Vac



3.3. Communication Port Descriptions

The communication port on the rear panel of the UPS is a true RS232 serial type. It may be connected to a computer and allows the computer to monitor the status of UPS, and controls the operation of the UPS, via an additional UPS software kit.

The bundled software of the UPS is for Windows environment, such as Windows 3.1, Windows 95, 98 & Windows NT. For other applications, such as Novell NetWare, Unix, etc., please contact your local distributor for appropriate solution.

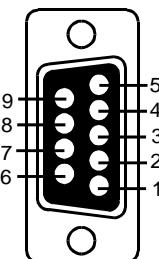
3.3.1. RS232 interface settings

The RS232 interface is to be configured as follows:

Baud Rate	: 2400 bps
Data Length	: 8 bits
Stop Bit	: 1 bit
Parity	: None

3.3.2. Pin Assignments of the RS232 port

The Pin Assignments of the RS232 port are illustrated as follows:



Pin 6: RS232 Rx
Pin 9: RS232 Tx
Pin 7: Ground

Chapter 4. Installation and Operation

Note: The packing condition and the external outlook of the unit should be inspected carefully before installation. Retain the packing material for future use.

4.1. Unpacking

1. Take the UPS out of the PE foam.

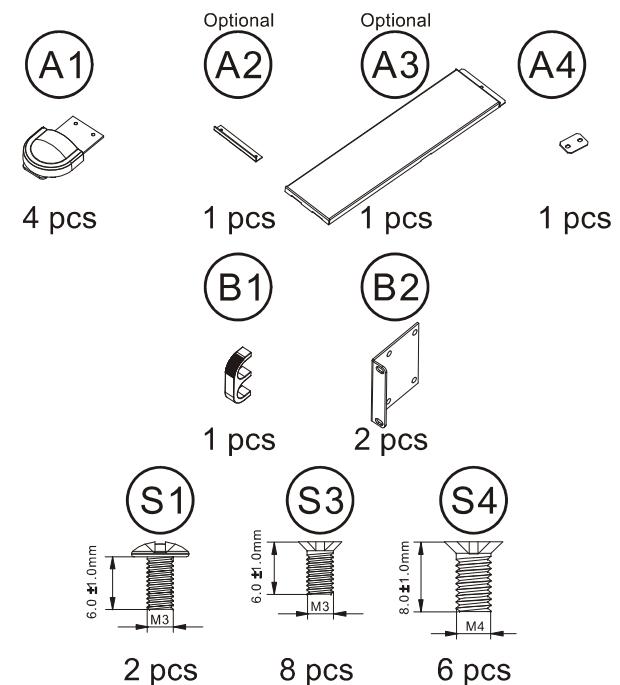
2. Remove the packing materials.

Note: The UPS module is approx. 12.5~39 kgs, be cautious when unpacking and lifting the unit to avoid injury.

3. Standard Package includes:

- User's Manual
- AC Input Power Cord (Not available for hard wiring connection models)
- IEC output cables (for the UPS with IEC sockets only)
- RJ11 Phone Jack Cable
- UPS communication kit (optional)

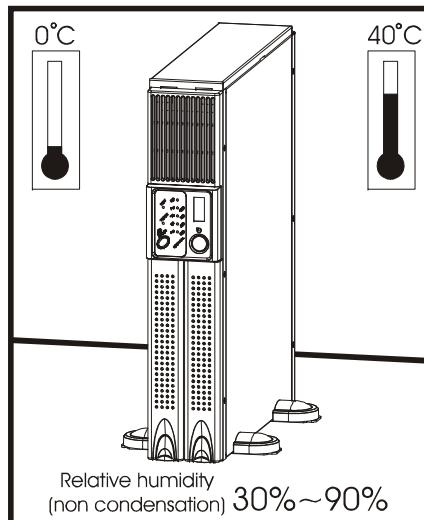
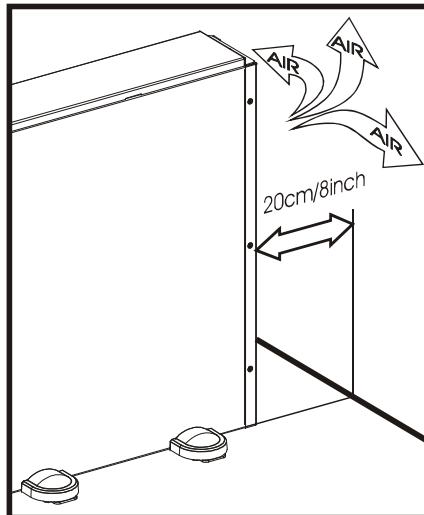
4. Accessories for Tower and Rack Mount



4.2. Selecting Installation Position

It is necessary to select a proper environment to install the unit, in order to minimize the possibility of damage to the UPS and extend the life of the UPS. Please follow the instructions below:

1. Keep at least 20cm(8 inches) clearance from the rear panel of the UPS from the wall or other obstructions.
2. Do not block the air-flow to the ventilation openings of the unit.
3. Please ensure the installation site environmental conditions are in accordance with the UPS working specifications to avoid overheat and excessive moisture.
4. Do not place the UPS in a dusty or corrosive environment or near any flammable objects.
5. This UPS is not designed for outdoor use.

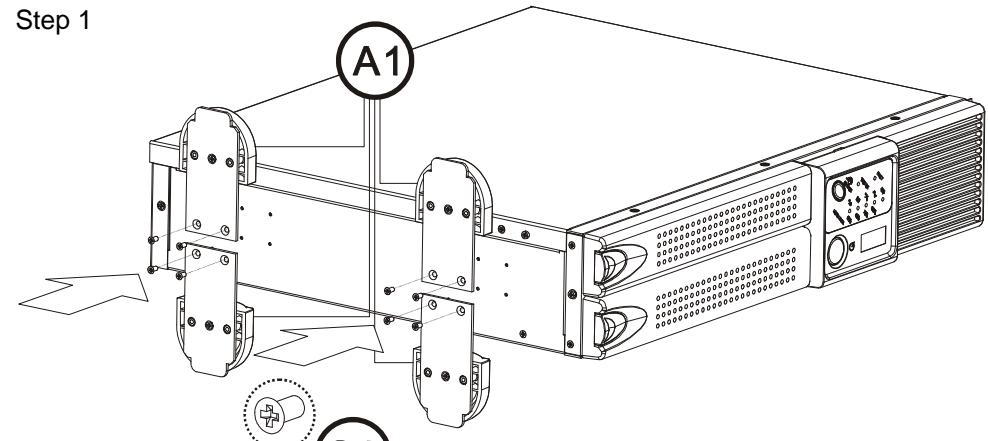


4.3. Installation Instructions

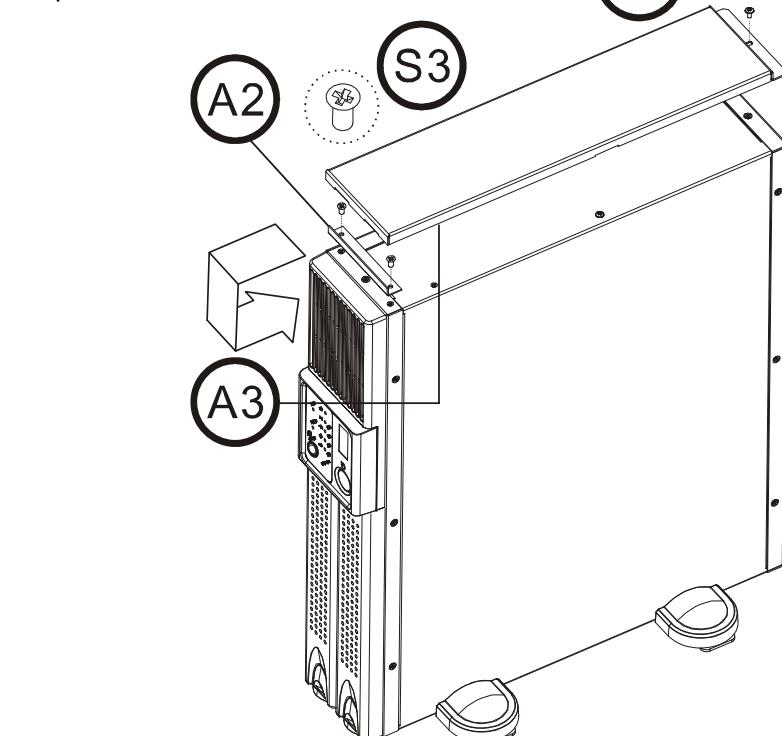
4.3.1. Tower installation

Stand alone unit

Step 1

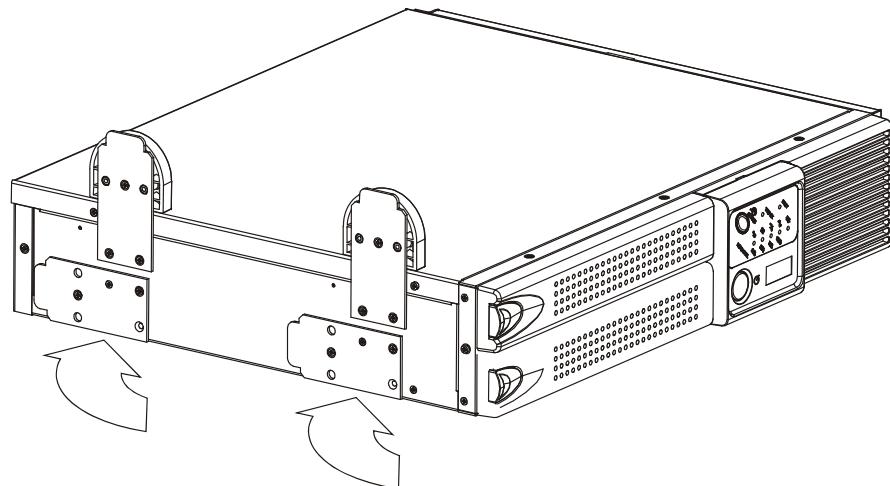


Step 2

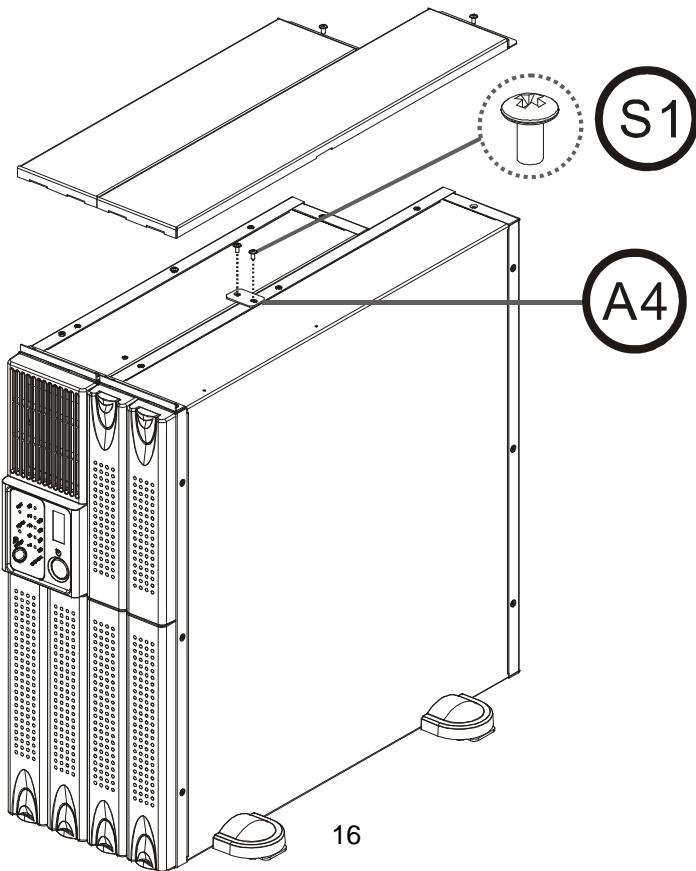


Use with extended battery bank

Step 1

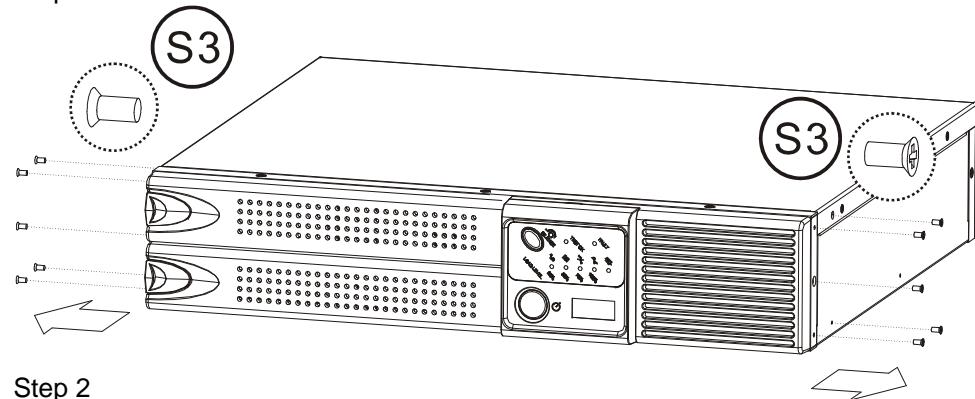


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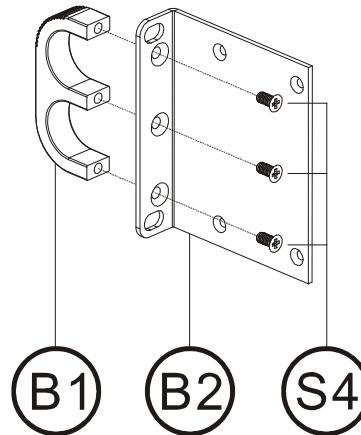


4.3.2. Rack Mount installation

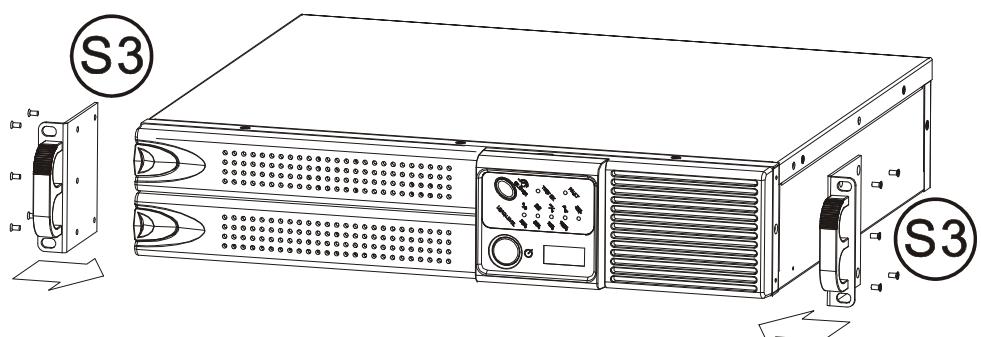
Step 1



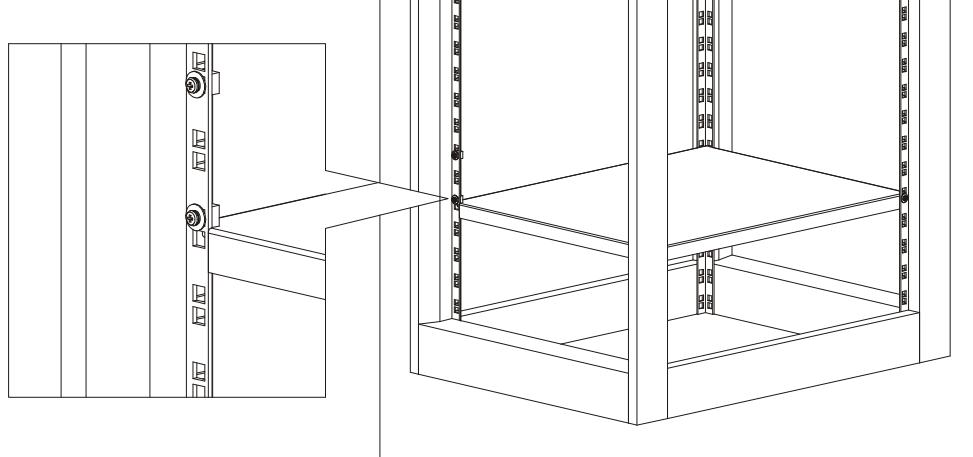
Step 2



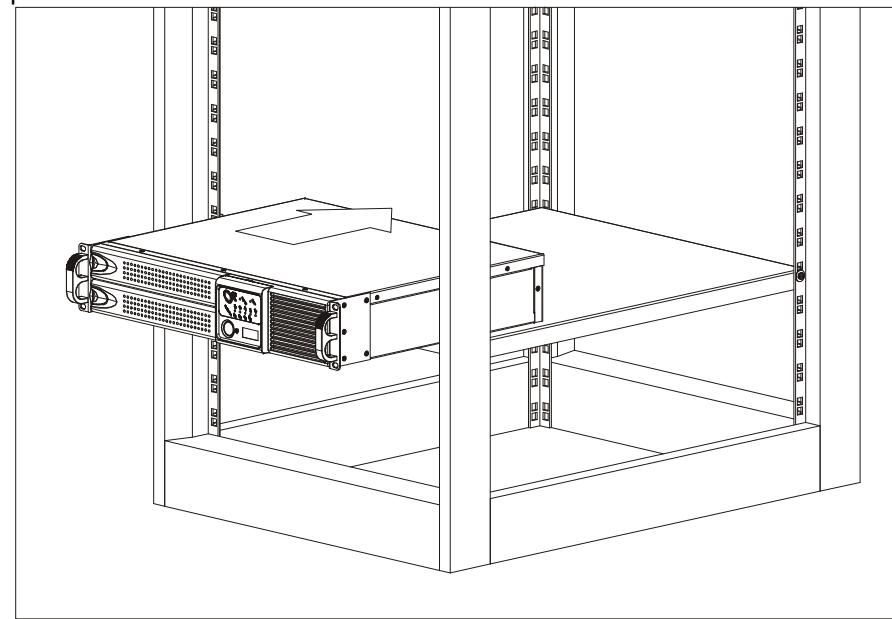
Step 3



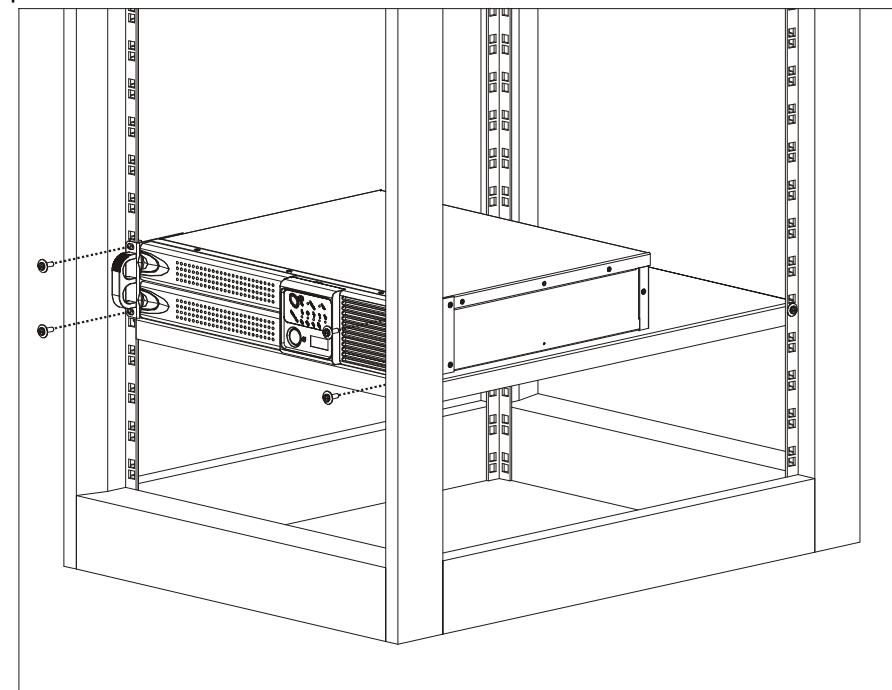
Step 4



Step 5



Step 6



4.4. Operation Test

All installation should be conducted or supervised by a qualified technician. Charge the UPS for more than 8 hours after unpacking to ensure the batteries of the UPS are fully charged before usage.

1. Make sure there is a proper grounding of the wall receptacle.
2. Verify if the voltage and frequency ratings match that of Utility, connect the AC Input power cord to a verified grounded 3-wire receptacle.
3. Push on the Main switch on the front panel to start the UPS, the ventilation fan should start indicating the UPS has been energized and performing self test.
4. After 7~10 seconds, the start-up of UPS will be completed, then the "Utility" LED and Inverter" LED will light up simultaneously.
5. Simulate a Mains failure by disconnecting the input power cord of the UPS to see whether the UPS remains operation (DC Mode) when Utility is absent. The "Utility" LED should extinguish and the alarm will sound continuously 1 min., then the alarm will sound again from the battery low voltage to the battery cut off. The UPS should continue to provide power supply at its output terminals. To mute the audible alarm, please push the Test/Silence Button on the front panel.
- 6 Re-connect the input power cord of the UPS to the utility receptacle. Push the Main switch to Turn Off the UPS. Connect the power cord of your device to the output receptacles of the UPS. Do not turn on your device at this time
7. Repeat Step 3 & 4. Turn on the switch of the device connected. Do not perform critical application on your device at this time
8. Repeat step 5. The connected device should continue to operate without interruption.
9. Your installation & operation tests are complete. You can turn on your device and perform application on your device.

4.5. Storage Instruction

For extended storage in a controlled environment, store at -15 to +30 °C ,+5 to +86 °F, the batteries should be charged for 12 hours every 6 months by plugging the UPS power cord into the wall receptacle. Repeat this step for every 3 months if the storage environment ambient temperature is at +30 to +45 °C, +86 to +113 °F.

4.6. SNMP Slot

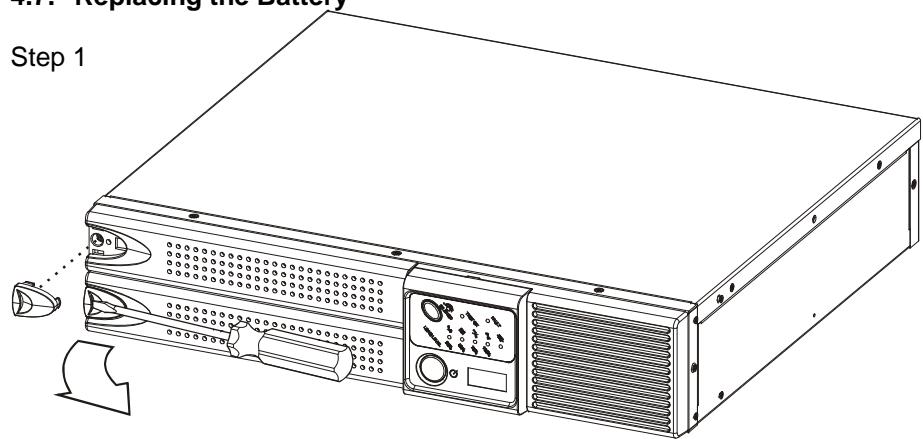
You may install the SNMP card into the SNMP slot on the rear panel of the UPS. The UPS may be connected to a TCP/IP network management system via the SNMP card. The SNMP slot kit is an optional feature of the UPS, so you shall purchase the kit from your local distributor before installing the SNMP card.

The installation shall be executed by a qualified technician authorized by your local distributor.

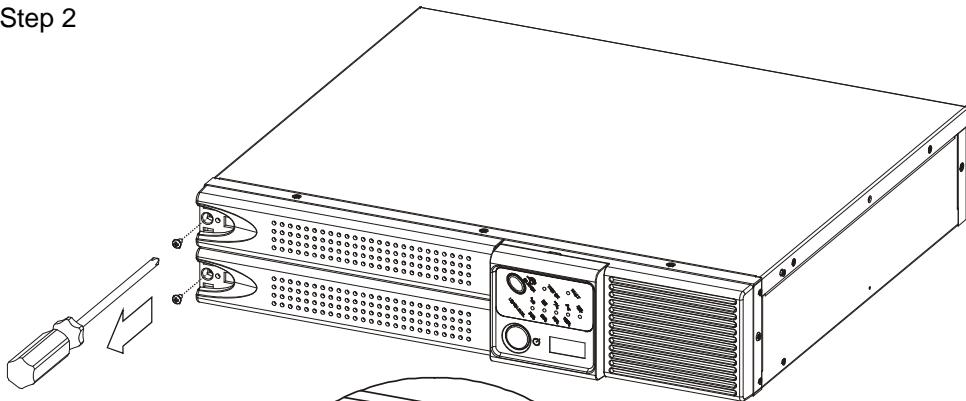
1. Insert the SNMP card into the SNMP slot.
2. Fasten the SNMP card properly.
3. Connect the network cable from the network device(ex. Hub) with SNMP accessibility to the UPS and set the SNMP card to "configuration" mode and configure the SNMP card.(Please refer to the user's manual of the SNMP Card for configuration instruction.) Your hardware installation is now completed.

4.7. Replacing the Battery

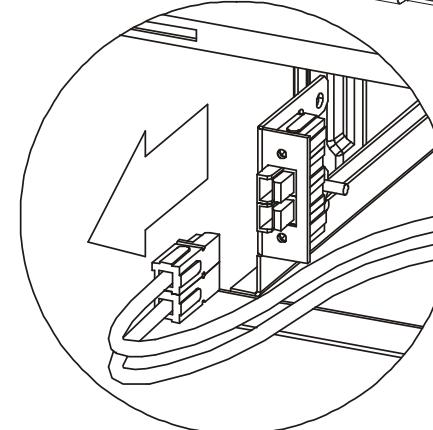
Step 1



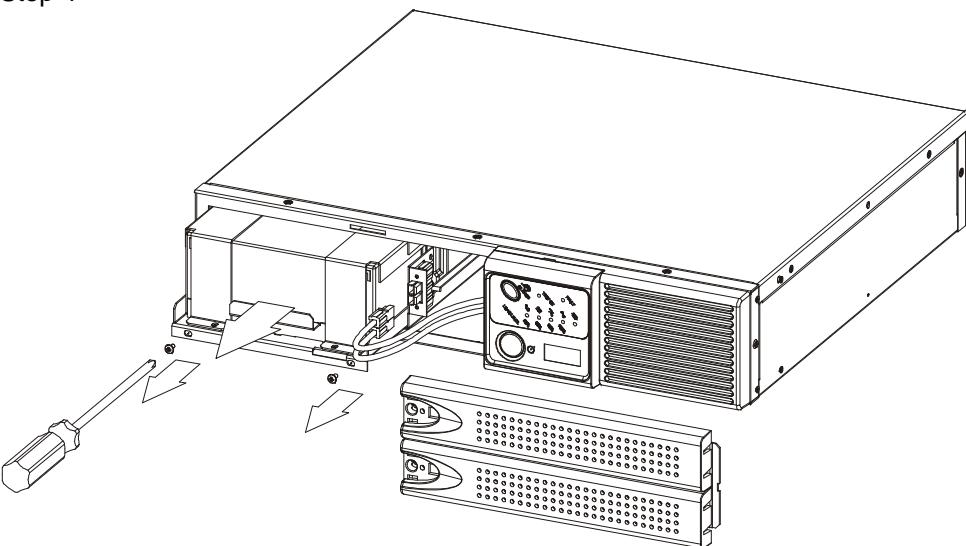
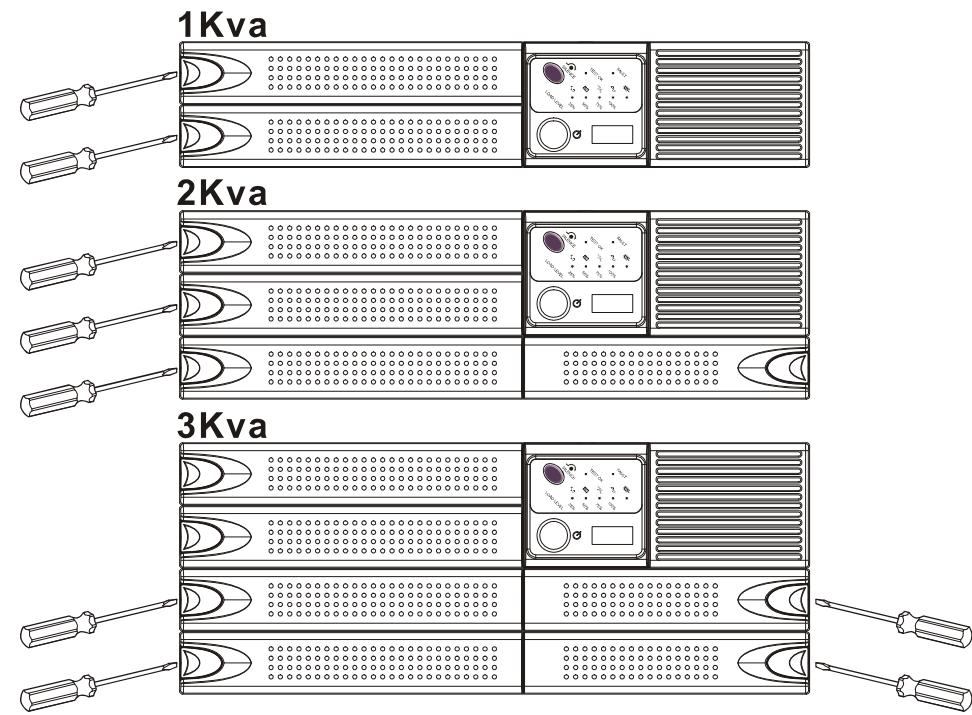
Step 2



Step 3



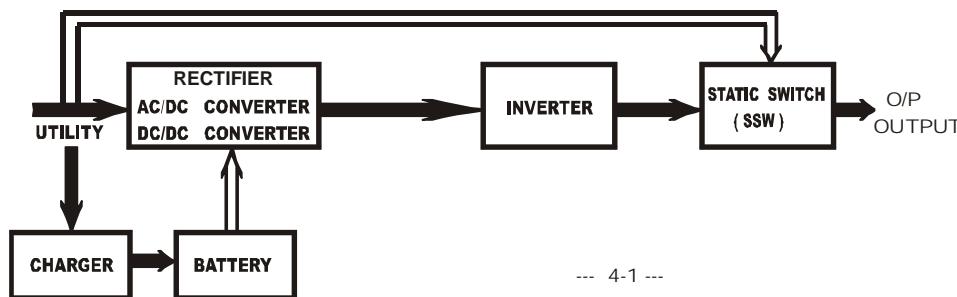
Step 4



Chapter 5. UPS Working Principle

5.1. When Utility is Normal

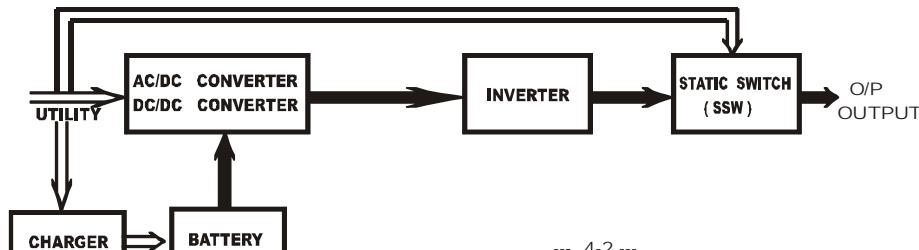
The working principle of the UPS under Utility normal condition is illustrated as follows,



When Utility is normal, the AC source is rectified to DC, partially fed into the charger to charge battery and partially fed into inverter. The inverter reverts the DC to a cleaned and pure AC to supply energy to the load connected. The Utility LED and Inverter LED Light up.

5.2. When Utility is Abnormal

The working principle of the UPS under Utility abnormal condition is illustrated as



follows,

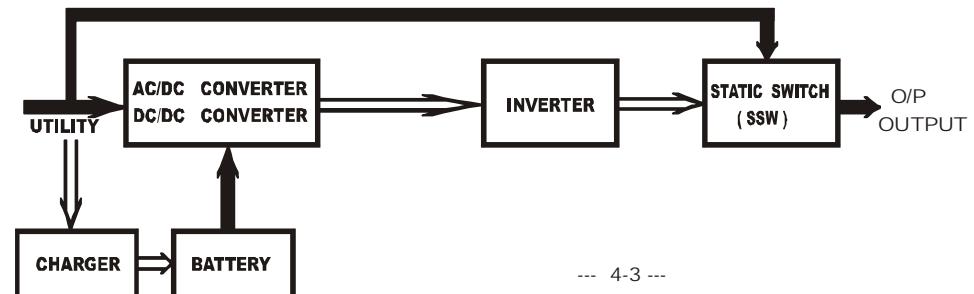
When Utility is abnormal, the UPS will direct the battery energy automatically to the Inverter without delay, and turn off the charger and AC/DC converter. The inverter revert DC to AC to supply energy to the output load connected without interruption. The Inverter LED lights up.

When Utility is back to Normal, the UPS will turn on the AC/DC converter, turn off DC/DC converter and switch the charger to charging position. It has the same working principle as figure 4.1.

During a blackout, the UPS will work as illustrated in figure 4.2. When Battery is low, buzzer will beep continuously till battery is completely cut off. The battery low protection of the UPS will cut off battery supply after a preset threshold to avoid the battery from over-drain. The Inverter LED and Bat. Low LED will light up till the UPS is automatically shut down. The UPS will re-start automatically when Utility is available. The working principle is the same as figure 4.1.

5.3. Overload Condition

The working principle of the UPS when overloading is illustrated as follows,

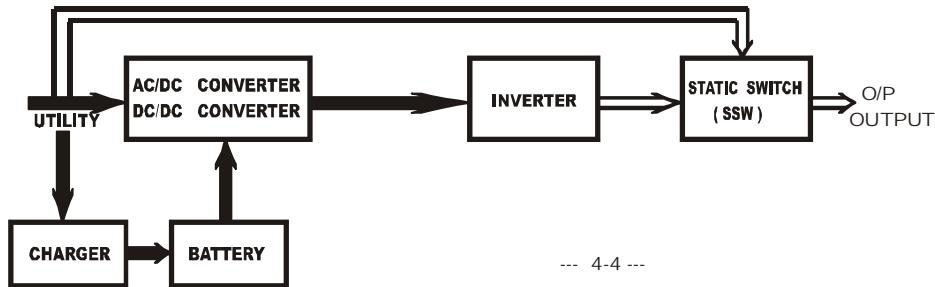


Normally, an inrush current is generated when switching on the connected device. If the UPS is in 105~120% loading, it will switch to bypass mode in 60 seconds. If The UPS is in 120%~150% loading, it will switch to bypass mode in 10 seconds. If The UPS is over 150% loading, it will switch to bypass mode immediately. The Utility LED, Bypass LED and Over Load LED light up. If overload condition is eliminated by reducing the load to 80%~90%, the UPS will switch back to Inverter mode automatically.

5.4. Inverter Failure

5.4.1. Output short circuit under inverter mode

If output load is short circuited under inverter mode, the UPS will turn off the output to prevent damage to its Inverter and the connected load. The Fault LED lights up and the buzzer sound continuously. The UPS will not turn on automatically after short circuit condition is eliminated. You are required to re-start the UPS manually. To re-start the UPS after short circuit condition is removed, you should push the Main Switch on the front panel to "OFF" position first, then To "ON" position again.



5.4.2. Output Short circuit under bypass Mode

If output load is short circuited under bypass mode, the AC fuse will trip open to prevent damage to the output load. You should replace a new fuse with same rating after the short circuit condition is eliminated.

5.5. Inverter Over temperature

If the UPS experiences over-temperature when Utility is normal, it will switch to bypass mode. The UPS will switch back to inverter mode when the over-temperature situation is eliminated. If it happens when Utility is abnormal, the buzzer will beep continuously and the Fault LED will light up. The output of the UPS will also be cut off.

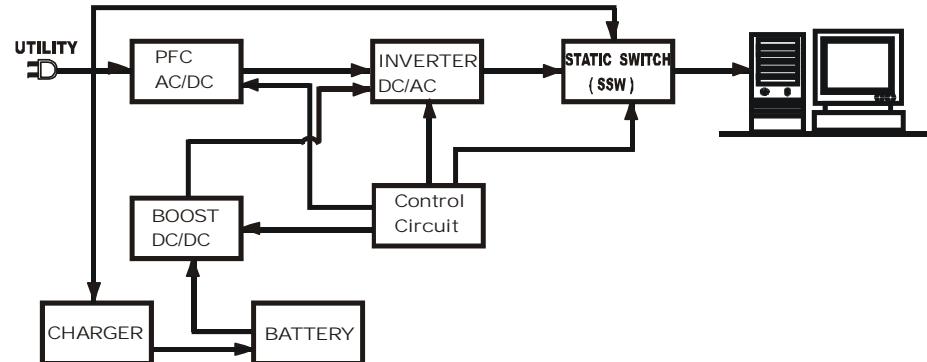
5.6. Inverter Over-current and Inverter Output Voltage Out of tolerance

If the UPS inverter delivers over-current and out-of-tolerance voltage to its output, the UPS is out of order. The UPS will switch to bypass mode when Utility is normal. The Utility LED, Bypass LED and Fault LED will light up.

If these two conditions occur when Utility is abnormal, the UPS will turn off the Output and the Fault LED will light up.

Chapter 6. Maintenance Guide

6.1. System Block Diagram



6.2. Trouble Shooting

When the UPS malfunctions during operation, you may check the list below for respective solution. Should the problem persists, please Contact your local distributor for help.

Situation	Check Items	Solution
Utility LED is not on and the UPS is on battery mode, when Utility is normal.	AC Input cord has loose connection or AC Input fuse is blown.	1. Secure the AC Input cord properly to the wall receptacle. 2. Replace the AC fuse with the same rating. 3. If problem persists, please call for service.
The UPS switches to battery mode then back to Utility mode, when connected device is turned on. Or, the UPS Switches back and forth between battery and Utility.	1. Check if any power strip is connected to the UPS. 2. Faulty Utility Receptacle.	1. Do not use power strip. 2. Get the Utility supply from an alternative receptacle.
Overload LED lights up		UPS is overloaded. Please remove some loads connected at the output of the UPS till the RED LED is turned off.

Situation	Check Items	Solution
Battery Low LED lights up		Battery is running low. Please proceed to shutdown your load immediately. Recharge the battery.
Fault LED lights up		Disconnect the output load immediately. Switch Off and On the UPS to see if the "Fault" LED is still on. If not, your output load has probably been shorted. Otherwise, call for service.
System fails to backup when Utility fails.	Check UPS to Battery connection (for extended battery configuration). Check the Battery Terminal voltage if is within its rating (12V)	Switch Off the UPS. Disconnect the input power cord from the rear panel and push on the Main Switch to see if the UPS is able to start up. If not, replace battery if necessary. If problem persists, call for service.
UPS is normal but no Output to load	Check to see if all power cords are properly connected as described in the installation procedures.	Check all outlets to see if they are properly connected. If problem persists, call for service.
Strange noise and smell		Immediately shut down the whole System. Disconnect the power from the UPS and call for service.

6.3. Maintenance

Clean the dust from the ventilation openings and intakes on the rear panel.

1. Turn off the UPS and wipe the casing with a damp cloth.
2. Periodically unplug the power cord of the UPS from the wall receptacle to test the batteries condition.

Note: Be sure you have already saved your application before you proceed with the battery discharging capability test.

Chapter 7. Bundled Software Installation Guide

7.1. Hardware Installation

1. Connect the male connector of RUPS II cable to the UPS communication port.
2. Connect the female connector of RUPS II cable to a dedicated RS232 port. If there is only a DB25 connector of the RS232 port available, you may use a DB9-DB25 adapter to convert it.

7.2. Software Installation

7.2.1. RUPS II Installation

A. RUPS II for MS-DOS

1. Insert the system diskette into your floppy disk driver and execute INSTALL.EXE under MS-DOS.

**A:\>CD\ DOS<Enter>
A:\DOS>INSTALL<Enter>**

2. Please select the MS-DOS menu from the installation menu box,
3. And create the path of RUPS II system diskette and the designated directory to it. (You may use the default values of RUPS II)
4. The installation program will copy all required files of the RUPS II into the designated path. It will also append a Load RUPS.EXE Command in your AUTOEXEC.BAT file automatically. After a complete installation is done, the installation program will execute the CONFIG.EXE automatically. You may modify the configurations of RUPS II now.

B. RUPS II for Windows 3.1, Windows 95, 98, 2000, NT, XP

1. Execute "A:\Windows\setup.exe" under Windows system.(This procedure can be achieved either by file manager or from the "RUN" command of Windows.)
2. The RUPS II Setup group is labeled as RUPS2W, you may rename it to the desired group you wish.

C. RUPS II for Novell Netware(Optional)

1. Login the File Server as a SUPERVISOR or a USER with Access Right in sub-directory SYS:SYSTEM. F:\>LOGIN SUPERVISOR
2. Insert the system diskette into the floppy disk Driver A (or your PC designated drive).
3. Execute INSTALL.EXE in Driver A.
F:\>A:
A:\>INSTALL
4. After the installation is complete, please shutdown your NetWare Operating System and re-start it. The system will load the PowerMan.NLM and execute it.
5. When the RUPS II for NetWare Is loaded, the Filer Server will broadcast a successful loading message on the screen. You may switch to the RUPS II Menu by pressing ALT_ESC simultaneously.

7.2.2. UPSilon 2000 Installation

A. UPSilon 2000 for Windows 95, 98, 2000, NT, XP

1. From the Start Button, choose "Run".
2. Type D:\Windows\Setup.exe
3. Choose OK.

B. UPSilon 2000 for Novell Netware V3.1x

1. Login the File Server(with access rights in SYS: SYSTEM)
2. Execute D:\Netware\V3.1x\Install.exe
3. Re-boot System.

C. UPSilon 2000 for Novell Netware V4.x

1. Login the File Server(with access rights in SYS: SYSTEM)
2. Execute D:\Netware\V4.x\Install.exe
3. Re-boot System

D. UPSilon 2000 for Novell Netware V5.x

1. Login the File Server(with access rights in SYS: SYSTEM)
2. Execute D:\Netware\V5.x\Install.exe
3. Re-boot System

E. UPSilon 2000 for FreeBSD and Linux

1. Log in as a super-user.
2. Use the 'ftp' utility in MS-DOS to copy files into the system directory '/tmp'.
3. Follow the instructions below to make the filename conversion after the 'ftp'

File transfer:

```
#cd/tmp  
#mv linux.z linux.Z, or  
#mv LINUX.Z linux.Z  
#chmod 755 install
```

4. Execute the installation program:
#./install

5. Select a target system from the menu, and configure the UPSilon for Unix(Make sure no other process using the same serial port), the installation Program will launch the UPSilon for Unix daemon process automatically.

Chapter 8. Appendix

8.1. Specifications

MODEL	1Kva	2Kva	3Kva
INPUT			
Voltage (Vac)	80~140 or 160~280		
Frequency (Hz)	50 / 60±5%(Auto Sensing)		
Phase	Single		
Input Power Factor	> 0.98(Full Load)		
OUTPUT			
Voltage (Vac)	100/110/115/120 or 200/220/230/240 DIP Switch Selectable		
Capacity(VA/W)	1000/700	3000/2100	3000/2100
Wave Form	Sine Wave, THD<3%(no load to full load)		
Voltage Regulation	±2%		
Frequency Stability	±0.5Hz (Free Running)		
Transient Response(ms)	+/-4% Under full load step and corrected within 60ms		
Synchronization	1 Hz/Sec. Slew Rate: Inverter Free Running If Input Frequency Over ±5% Range		
Crest Factor	3 : 1		
Transfer Time (Line Fault)	0 ms		
Efficiency (AC to AC)	> 83%		
Run Time(Full Load)	8 Min.	8 Min.	7 Min.
DC Start	Yes		
BATTERY			
Type	Sealed Maintenance Free Lead Acid		
Quantity (pcs)	3	6	8
Voltage (Vdc)	36	72	96
Recharge Time	8 Hours To 90%		
Supplementary Charger(Optional)	200/500W Charger, for extended back-up application.		
DISPLAY			
LED	Utility, Battery Low, Inverter, Bypass, Self-Test, Load Level, Battery Level, Overload, Fault Conditions		

MODEL	1Kva	2Kva	3Kva
PROTECTION			
Overload	100%~120% delay 60 seconds before switching to bypass; 120%~150% delay 10 seconds before switching to bypass; >150% immediately switch to bypass		
Short Circuit	a) Inv. Mode: UPS shutdown and Cut the Output. b) Bypass Mode: AC Input fuse Breaks down.		
Overheat	a) Utility Normal: Switch to Bypass. b) Utility Abnormal: Buzzer sounds continuously, Fault LED lights up then cut the output.		
High Voltage Trip-Off	Switch to Backup Mode		
Battery Low	Alarm continuously till battery cutoff		
Noise Suppression	Comply with EN50091-2.		
Spike Suppression	Comply with EN61000-4-5.		
ALARM			
	Audible and Visual	Line Failure, Battery Low, Transfer to Bypass, Overload, System Fault Conditions	
PHYSICAL			
Dimensions (WxHxD, mm)	440x88x385 2U		440x132x482 3U
Net Weight (Kgs)	16		39
Oulets(IEC/Local)	for detailed information, please refer to Chapter 4.		
ENVIRONMENT			
Temperature	0°C ~40°C		
Humidity	30~90% RH Maximum, Non-Condensing		
Noise	<45 dB (at 1 meter)		
COMPUTER INTERFACE			
Interface Type	Standard RS232 Interface		
Protocol	MegaTec RUPS II		
SNMP Adaptability	Yes, Slot for Standard SNMP Card Available		
Operating Systems	Novell Netware, Windows, OS/2, NetLite, MS-DOS, HP-UX, AIX, SUN OS, UNIX, XENIX, Linux,etc		
SAFETY CONFORMANCE			
Safety Standard	EN50091-1, cUL		
EMC Standard	EN50091-2, EN61000-3-3, EN61000-3-2, FCC Class A		
Marks	CE, cUL		

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